

REMARKS

The Examiner has rejected claims 1 – 16 under 35 U.S.C. 103 (a) as being unpatentable over Tsai et al (U.S. Pat. No. 5,401,446) alone or on view of Dahringer et al. (U.S. Pat. No. 5,871,845). Specifically, the Examiner states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to facilitate the blend taught by the primary reference with a similar charge control agent in the absence of unexpected results. The Examiner states that this would have been obvious in order to increase its charge stability. In light of the amendments to the claims, and the comments presented hereto, this rejection is respectfully traversed.

As the Examiner correctly states in the rejection, Tsai does indeed teach a blend of electret fibers and dissimilar non-electret fibers. See Tsai '446 col. 4, lines 16 – 24. However, the dissimilar fibers as taught by Tsai '446 are not the same fibers that the Examiner cites as containing the relative amounts for the purpose of making the current rejection. The paragraph that the Examiner recites as containing this disclosure does not speak to the concentrations of dissimilar fibers. See Tsai '446 col. 4, lines 25 – 48. Rather, the cited concentrations have only to do with the concentration of the charge control agents that are grafted to a percentage of the polyolefin as used in a homogeneous fibrous web. Tsai '446 states that 1 – 30% of the polyolefins can be modified by grafting with an acrylic acid, or some other cationic or anionic group, with the balance of 70 – 99% being ungrafted polyolefin. See Tsai '446 col. 4, lines 25 – 33. Tsai '446 goes on to state that the grafted polyolefin and non-grafted polyolefin should be identical to one another, and that preferably both are polypropylene. See Tsai '446 col. 4 lines 43 – 48. Thus, this discloses only the relative amounts of grafted and ungrafted polyolefins. These percentages have nothing to do with the relative amounts of dissimilar fibers that can be employed.

The reason this is important is the different theories on which the Applicant's invention and the Tsai '446 patent is based. In the Tsai reference, the difference in charge potential is due to inducing a localized positive or negative charge in a homogeneous nonconductive web. Tsai then uses the charge control agents to slow the "charge leak" and to maintain the localized charges in the homogenous web. This is generally described on page 2, paragraph 1 of the application as filed. In contrast, the Applicant is utilizing a triboelectric effect on top of this coulombic charge transfer. This is the reason for the requirement that the Applicant's fibers be dissimilar. There has to be a differing electron potential between fibers in the web for this to occur, since similar fibers would have the same potential to transfer charges, and would net a zero effect. With dissimilar fibers however, the fibers are selected so that there is a triboelectric difference between the two fibers. In such a case, charge will naturally flow from the more electropositive fiber, to the more electronegative fiber, thus leaving both fibers oppositely charged. While not wishing to be bound to any one theory, it is believed that when the dissimilar fibers are employed, it creates an additive effect with the coulombic induced charges, thus creating a more efficient filter.

Additionally, the Applicant states in page 6, paragraph 4 of the Application as Filed, that "[t]he dissimilar non-electret fiber may be any common synthetic fiber so long as it is not the same polymer (preferably not even the same class of polymer) as the electret synthetic fiber polymer." Tsai '446 states however in forming his web that the grafted and non-grafted fibers should be the same fiber, and preferably both should be polypropylene. See Tsai '446 col. 4 lines 43 - 48. Thus, the Applicant's invention is drawn to a different fibrous web than that which is disclosed in the Tsai '446 reference.

Furthermore, when dissimilar fibers are mentioned, the Tsai '446 reference limits itself to natural non-conductive fibers, such as cotton and wood pulp. Tsai '446 col. 4, lines 17 - The Applicant's invention utilizes only synthetic electret and non-electret fibers.

In an attempt to further clarify this, the Applicant has amended claim 1 so as to now only claim synthetic electret and non-electret fibers.

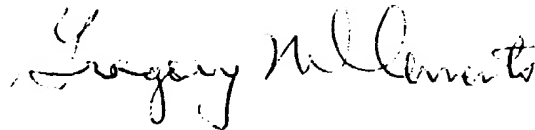
With regard to the remainder of the claims, the Applicant submits that they are now also allowable as depending from an otherwise allowable independent claim 1.

The Examiner rejects claims 3, 9, and 10 under 35 USC 112 second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which the applicant regards as the invention. Specifically, the Examiner rejects these claims as including improper Markush groups. This rejection is respectfully traversed.

The Markush case never stood for the proposition that there was only one way to present grouping of alternative claims. *Ex parte Markush*, 1925 C.D. 126 (Comm'r Pat. 1925). Instead, the language of Markush reciting "selected from a group consisting of A, B, and C" is merely one acceptable way of presenting alternative limitations. Alternative expressions using "or" are acceptable, such as "wherein R is A, B, C, or D." See MPEP §2173.05(h). If the Examiner is having difficulty with additional aspects of these claims that Applicant is unaware of, then Applicant requests that the Examiner clarify the current rejection in the Office Action. The language of claims 3, 9, and 10 is presented in proper form as currently written.

In view of these remarks and the amendment to independent claim 1, it is submitted that the application is now in a condition for allowance and such favorable action is respectfully requested on behalf of the Applicant.

Respectfully submitted,

A handwritten signature in cursive script, reading "Gregory N. Clements".

Gregory N. Clements
Attorney for Applicant
Registration No. 30,713
DOUGHERTY, CLEMENTS & HOFER
1901 Roxborough Road
Suite 300
Charlotte, North Carolina 28211
Telephone: 704/366-6642